

Level Measurement

Continuous level measurement - Ultrasonic controllers

SITRANS LU01 and LU02

Overview



The SITRANS LU01 is an ultrasonic long-range level controller for liquids and solids in a single vessel up to 60 m (200 ft).

Handheld programmer shown is an accessory and must be ordered separately.

Benefits

- Single point, long-range level monitoring
- Easy to install; easy to program using removable infrared key-pad (optional)
- Compatible with all Echomax® transducers
- Backlit LCD display with reading in standard engineering units
- Automatic level-to-volume conversion for standard or custom tank shapes
- Dolphin Plus and SmartLinX compatible
- High/low alarms

Application

The system consists of a SITRANS LU01 monitor linked to a non-contacting ultrasonic transducer that can be mounted up to 365 m (1200 ft) away. The SITRANS LU01 will measure distance, level or volume, and it features patented Sonic Intelligence® echo processing software for superior reliability.

Readings are displayed in user-selectable linear engineering units on the backlit LCD.

An on-board communications port automatically configures for RS-232, RS-485 or bi-polar current loop. The SITRANS LU01 will connect to a DCS or PLC using Siemens SmartLinX® interface modules, giving you remote 2-way communication and full parameter access.

Modules for popular industrial buses can be factory installed or added later to meet changing needs. No external gateway is required, reducing hardware and cabling costs.

- Key Applications: chemical storage, liquid storage, bulk solids storage (gravel, flour bins, grains, cereals), plastic pellets

Overview



The SITRANS LU02 is a dual point ultrasonic long-range level controller for liquids and solids in one or two vessels up to 60 m (200 ft).

Handheld programmer shown is an accessory and must be ordered separately.

Benefits

- Dual point, long-range level monitoring
- Easy to install; easy to program using removable infrared key-pad (optional)
- Compatible with all Echomax® transducers
- Backlit LCD display with reading in standard engineering units
- Automatic level-to-volume conversion for standard or custom tank shapes
- Dolphin Plus and SmartLinX compatible
- High/low alarms

Application

SITRANS LU02 will measure liquids, solids or a combination of both in one or two vessels of different sizes, shapes and configurations up to 60 m (200 ft).

The system uses ultrasonic technology to measure level, space, distance, volume or average/differential. It features patented Sonic Intelligence® echo processing software for superior reliability. Transducers can be mounted up to 365 m (1200 ft) from the monitor.

Readings are displayed in user-selectable linear engineering units on the backlit LCD.

It features an onboard communications port that automatically configures for RS-232, RS-485 or bi-polar current loop. It will connect to a DCS or PLC using Siemens SmartLinX® interface modules, giving you remote 2-way communication and full parameter access. Modules for popular industrial buses can be factory installed or added later to meet changing needs. No external gateway is required, reducing hardware and cabling costs.

- Key Applications: chemical storage, liquid storage, bulk solids storage (gravel, flour bins, grains, cereals), plastic pellets, tripper car

Level Measurement

Continuous level measurement - Ultrasonic controllers

SITRANS LU01 and LU02

Technical specifications

Mode of operation

Measuring principle	Ultrasonic level measurement
Measuring range	0.3 ... 60 m (1 ... 200 ft)
Measuring points	SITRANS LU01: Max. one point; SITRANS LU02: Max. two points

Output signal

Ultrasonic transducer	Echomax series, ST-H transducers
Relays	4 SPDT Form C relays, rated at 5 A at 250 V AC, resistive load
mA output	0/4 ... 20 mA, optically isolated
• Max. load	750 Ω , isolated, 30 V
• Resolution	0.1 % of range
• Outputs	SITRANS LU01: Max. 1 mA output SITRANS LU02: Max. 2 mA outputs

Accuracy

Error in measurement	0.25 % of range or 6 mm (0.24"), whichever is greater
Resolution	0.1 % of measuring range or 2 mm (0.08"), whichever is greater
Temperature compensation	-50 ... +150 °C (-58 ... +302 °F) <ul style="list-style-type: none"> • Integral temperature sensor • External TS-3 temperature sensor (optional) • Programmable fixed temperature

Rated operating conditions

Ambient conditions	
• Ambient temperature for enclosure	-20 ... +50 °C (-4 ... +122 °F)

Design

Weight	2.7 kg (6 lbs)
Material (enclosure)	Polycarbonate
Degree of protection (wall mount)	IP65

Electrical connection

Ultrasonic transducer cable extension	RG62-A/U coaxial cable with low capacitance
mA output signal	2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm ² (22 ... 18 AWG), Belden® 8760 or equivalent is acceptable
Electrical connection and relay connection	Copper conductor according to local requirements, rated 250 V 5 A
Synchronization	Up to 16 LU01/LU02 units can be synchronized together

Power supply

AC model	100/115/200/230 V AC \pm 15 %, 50/60 Hz, 31 VA
DC model	18 ... 30 V DC, 25 W

Displays and controls

	51 x 127 mm (2 x 5") graphics LCD with backlighting
Memory	EEPROM (non-volatile), no backup battery required
Programming	Using removable programmer (ordered separately) or Dolphin Plus (option)

Certificates and approvals

- CE, CSA_{US/C}, FM, ATEX II 3D
- Lloyd's register of Shipping (Categories ENV1, ENV2, ENV3 and ENV5)

Options

External temperature sensor	TS-3
Communications	<ul style="list-style-type: none"> • SmartLinX: protocol-specific modules as interface for popular industrial fieldbus systems • Dolphin Plus: Siemens Windows®-compatible interface and ComVerter link (infrared)

Level Measurement

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SITRANS LU01 and LU02

Selection and Ordering data

SITRANS LU01/LU02

Single or dual point ultrasonic long-range level monitoring system for liquids and solids, and ranges up to 60 m (200 ft).

Number of measuring points

LU01 version, 1 point

LU02 version, 2 points

Input voltage

100/115/200/230 V AC, voltage selector switch
18 ... 30 V DC

Feature software

Standard

Application software

Standard

Data communications

No module (SmartLinx ready)
SmartLinx Allen-Bradley® Remote I/O module
SmartLinx PROFIBUS DP module
SmartLinx Modbus® RTU module

Enclosure

Wall mount
Wall mount, drilled, 6 x M20

Approvals

CE, CSA_{US/C}, FM¹⁾
CE²⁾
ATEX II 3D¹⁾

¹⁾ Available with enclosure option 1 only

²⁾ Available with enclosure option 3 only

C) Subject to export regulations AL: N, ECCN: EAR99

Order No.

C) 7ML5004-

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Selection and Ordering data

Further designs

Please add "-Z" to Order No. and specify Order code(s).

Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:
Measuring-point number/identification (max. 16 characters) specify in plain text

Operating Instructions

SITRANS LU01

English

French

German

SITRANS LU02

English

French

German

Note: The Operating Instructions should be ordered as a separate line item.

This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.

Other Operating Instructions

SmartLinx Allen-Bradley Remote I/O, English

SmartLinx PROFIBUS DP, English

SmartLinx PROFIBUS DP, German

SmartLinx PROFIBUS DP, French

SmartLinx Modbus, English

SmartLinx Modbus, German

SmartLinx Modem, English

Note: The appropriate SmartLinx Operating Instructions should be ordered as a separate line on the order.

Accessories

Handheld programmer

Tag, stainless steel, 12 x 45 mm (0.47 x 1.77"),
one text line, suitable for enclosures

M20 cable gland kit (6 M20 cable glands,
6 M20 nuts, 3 stop plugs)

M20 cable gland kit (4 M20 cable glands, 4 M20
nuts, 4 washers)

TS-3 Temperature Sensor -
see TS-3 on page 5/191

Spare parts

Card, LU01 mother main, AC, comm ready

Card, LU02 mother main, AC, comm ready

Card, LU02 daughter, comm ready

Card, LU01 daughter, comm ready

Card, display
See SmartLinx product page 5/310 for more
information.

C) Subject to export regulations AL: N, ECCN: EAR99

®Modbus is a registered trademark of Schneider Electric.

®Allen-Bradley is a registered trademark of Rockwell Automation.

™DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA).

Order code

Y15

Order No.

C) 7ML1998-5BE02

C) 7ML1998-5BE12

C) 7ML1998-5BE32

C) 7ML1998-5BD02

C) 7ML1998-5BD12

C) 7ML1998-5BD32

C) 7ML1998-1AP03

C) 7ML1998-1AQ03

C) 7ML1998-1AQ33

C) 7ML1998-1AQ12

C) 7ML1998-1BF01

C) 7ML1998-1BF31

C) 7ML1998-1BG01

7ML1830-2AN

7ML1930-1AC

7ML1830-1GM

7ML1930-1FV

7ML1830-2AN

C) 7ML1830-1KX

C) 7ML1830-1MA

C) 7ML1830-1LP

C) 7ML1830-1LN

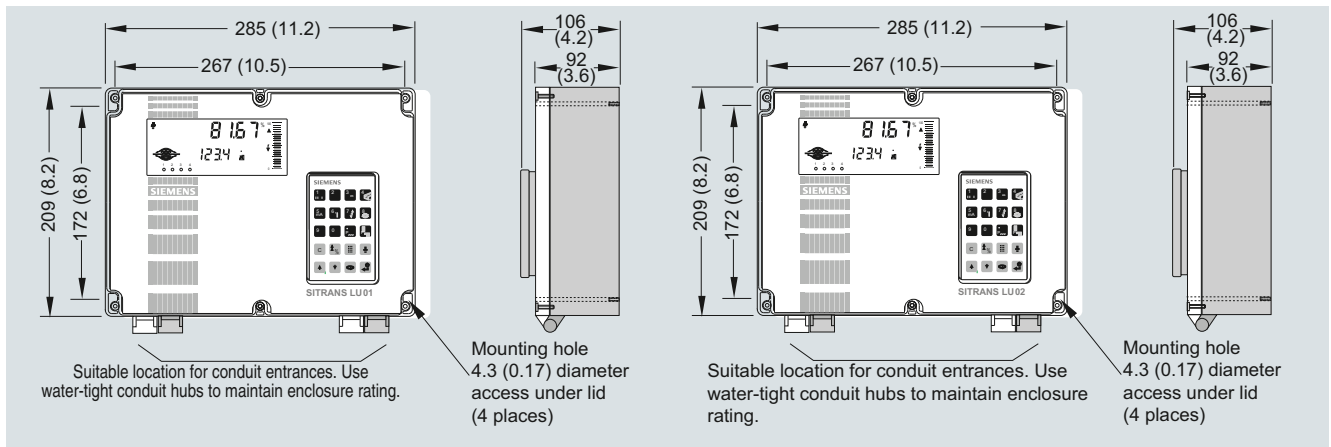
C) 7ML1830-1LQ

Level Measurement

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SITRANS LU01 and LU02

Dimensional drawings



Dimensional drawings for SITRANS LU01 (left) and SITRANS LU02 (right), dimensions in mm (inch)

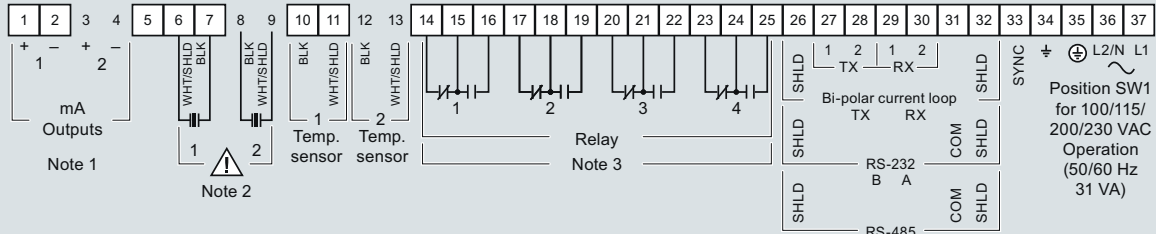
Level Measurement

Continuous level measurement - Ultrasonic controllers

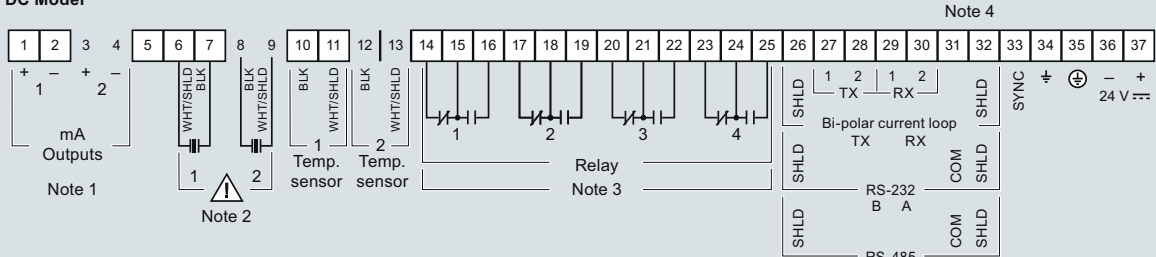
SITRANS LU01 and LU02

Schematics

AC Model



DC Model

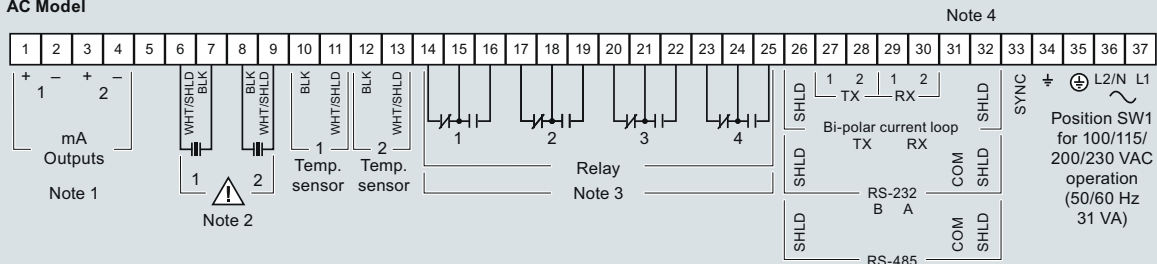


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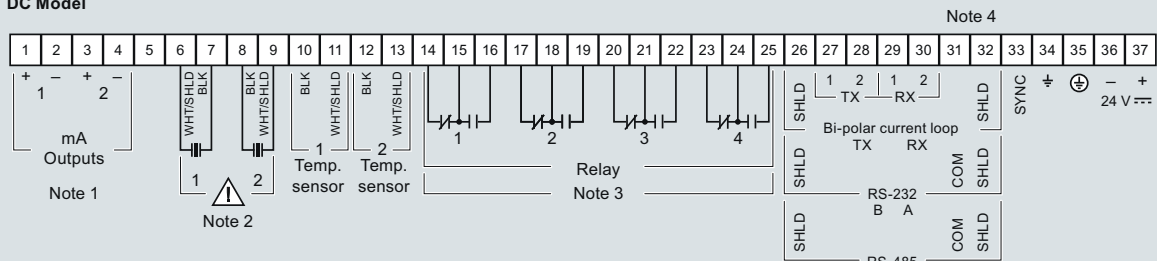
1. Optically isolated, 750 Ω max. load
2. Use RG62-A/U coaxial (or equivalent) for extensions up to 365 m (1200 ft). Run in grounded metal conduit, separate from other wiring.
3. Each relay has 1 set of Form 'C' (SPDT) contacts, relay rated at 5 A 250 V AC, non-inductive, when equal or lower rated limiting fuses are installed.
4. Required if mounted adjacent to other SITRANS LU01 units or other specified Siemens Milltronics devices. Interconnect all 'SYNC' terminals with a single 18 AWG (0.5mm²) wire.

SITRANS LU01 connections

AC Model



DC Model



Note:

1. Optically isolated, 750 Ω max. load
2. Use RG62-A/U coaxial (or equivalent) for extensions up to 365 m (1200 ft). Run in grounded metal conduit, separate from other wiring.
3. Each relay has 1 set of Form 'C' (SPDT) contacts, relay rated at 5 A 250 V AC, non-inductive, when equal or lower rated limiting fuses are installed.
4. Required if mounted adjacent to other SITRANS LU01 units or other specified Siemens Milltronics devices. Interconnect all 'SYNC' terminals with a single 18 AWG (0.5mm²) wire.

SITRANS LU02 connections

Level Measurement

Continuous level measurement - Ultrasonic controllers

SITRANS LU10

Overview



SITRANS LU10 is an ultrasonic long-range level monitor for liquids and solids, offering 10-point monitoring in a single unit.

Handheld programmer shown is an accessory and must be ordered separately.

Benefits

- Ten point, long-range level monitoring
- Automatic level-to-volume conversion for standard or custom tank shapes
- Dolphin Plus and SmartLinx® compatible
- Backlit LCD display with reading in standard engineering units
- Easy to install, easy to program using removable infrared keypad (optional)

Application

It can be used in a wide range of applications to scan liquids, solids or a combination of both contained in vessels of differing size, shape and configuration up to 60 m (200 ft).

SITRANS LU10 uses ultrasonic technology to measure level, space, distance, volume or average/differential. Transducers can be mounted up to 365 m (1200 ft) from the monitor. The SITRANS LU10 features patented Sonic Intelligence® echo processing software for superior reliability. Readings are displayed in user-selectable linear engineering units on the LCD.

SITRANS LU10 will connect to a DCS or PLC using Siemens SmartLinx® interface modules, giving you remote 2-way communication and full parameter access. Modules for popular industrial buses can be factory installed or added later to meet changing needs. No external gateway is required, reducing hardware and cabling costs.

- Key Applications: chemical storage, liquid storage, bulk solids storage (sugar, flour bins, grains, cereals), plastic pellets, tank farms

Technical specifications

Mode of operation	
Measuring principle	Ultrasonic level measurement
Measuring range	Max. 0.3 ... 60 m (1 ... 200 ft)
Measuring points	Max. 10
Output	
Ultrasonic transducer	Echomax® series, ST-H transducers
Relays	<ul style="list-style-type: none"> • SITRANS LU SAM module (option): 20 alarm/control relays • SPDT Form C relays, rated 5 A at 250 V AC, resistive load
mA output	SITRANS LU A0 module (option): 0/4 ... 20 mA, optically isolated
• Max. load	750 Ω , isolated
• Resolution	0.1 % of range
Accuracy	
Error in measurement	0.25 % of range or 6 mm (0.24"), whichever is greater
Resolution	0.1 % of measuring range or 2 mm (0.08"), whichever is greater
Temperature compensation	-50 ... +150 °C (-58 ... +302 °F) <ul style="list-style-type: none"> • Integral temperature sensor • External TS-3 temperature sensor (expandable to 10 inputs with optional TIB-9 card) • Programmable fixed temperature
Rated operating conditions	
Ambient conditions	• Ambient temperature for enclosure -20 ... +50 °C (-4 ... +122 °F)
Design	
Weight	2.7 kg (6 lbs)
Material (enclosure)	Polycarbonate
Degree of protection (wall mount)	IP65/Type 4X/NEMA 4X
Electrical connection	
Ultrasonic transducer	RG62-A/U coaxial cable with low capacitance
Signal transmission	2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm ² (22 ... 18 AWG), Belden® 8760 or equivalent is acceptable
Electrical connection and relay connection	Copper conductor according to local requirements, rated 250 V 5 A
Synchronization	Up to 16 LU10 units can be synchronized together
Power supply	100/115/200/230 V AC \pm 15 %, 50/60 Hz, 31 VA
Displays and controls	
Memory	EEPROM (non-volatile), no backup battery required
Programming	Using removable programmer (ordered separately) or Dolphin Plus (option)
Certificates and approvals	
<ul style="list-style-type: none"> • CE, C-TICK, FM, CSA_{US/C}, ATEX II 3D • Lloyd's register of Shipping (Categories ENV1, ENV2, ENV3 and ENV5) 	

Level Measurement

Continuous level measurement - Ultrasonic controllers

SITRANS LU10

Options

Expansion card	TIB-9, increases the number of TS-3 inputs from 1 ... 10
External temperature sensor	TS-3
Communications	<ul style="list-style-type: none"> SmartLinx: protocol-specific modules as interface for popular industrial fieldbus systems Dolphin Plus: Siemens Windows[®] compatible interface and ComVerter link (infrared)
I/O devices	<ul style="list-style-type: none"> Max. 3 I/O devices per SITRANS LU10 SITRANS LU AO analog output module (max. 1) SITRANS LU SAM, satellite alarm module (max. 2)

[®]Windows is a registered trademark of Microsoft Corporation.

Selection and Ordering data

Order No.	
SITRANS LU10	C) 7ML5007-
Ten point ultrasonic long-range level monitoring system for liquids and solids applications, and ranges up to 60 m (200 ft).	
Input voltage	1
100/115, 200/230 V AC, selectable	
Feature software	A
Standard	
Application software	A
Standard	
Data communications	0
No module (SmartLinx ready)	1
SmartLinx Allen-Bradley [®] Remote I/O module	2
SmartLinx PROFIBUS DP module	3
SmartLinx Modbus [®] RTU module	
TIB-9 temperature card	0
None	1
With TIB-9 card	
Enclosure	1
Wall mount	2
Wall mount, drilled, 12 x M20	
Approvals	A
CE, CSA _{US} (C), FM ¹⁾	B
ATEX II 3D ¹⁾	D
CE, C-TICK ²⁾	

1) Available with Enclosure option 1 only

2) Available with Enclosure option 2 only

C) Subject to export regulations AL: N, ECCN: EAR99

Selection and Ordering data

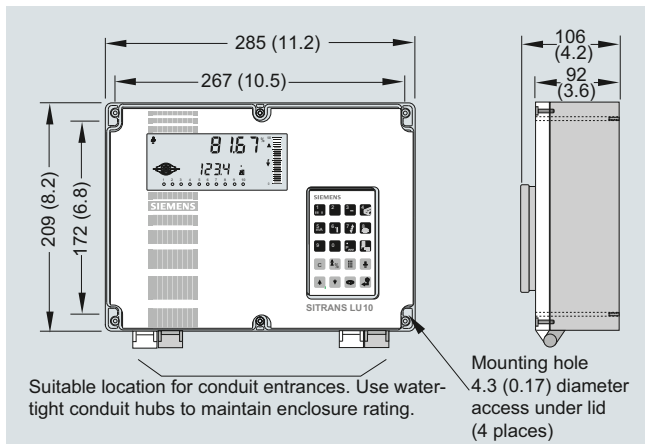
Order code	
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
Stainless steel tag [69 x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters) specify in plain text	Y15
Operating Instructions	Order No.
English	C) 7ML1998-5AN02
French	C) 7ML1998-5AN12
German	C) 7ML1998-5AN32
Other Operating Instructions	
SmartLinx Allen-Bradley Remote I/O, English	C) 7ML1998-1AP03
SmartLinx PROFIBUS DP, English	C) 7ML1998-1AQ03
SmartLinx PROFIBUS DP, German	C) 7ML1998-1AQ33
SmartLinx PROFIBUS DP, French	C) 7ML1998-1AQ12
SmartLinx Modbus, English	C) 7ML1998-1BF01
SmartLinx Modbus, German	C) 7ML1998-1BF31
SmartLinx Modem, English	C) 7ML1998-1BG01
Note: The appropriate SmartLinx Operating Instructions should be ordered as a separate line on the order.	
Accessories	
Handheld programmer	7ML1830-2AN
Tag, stainless steel, 12 x 45 mm (0.47 x 1.77"), one text line, suitable for enclosures	7ML1930-1AC
M20 cable gland kit (6 M20 cable glands, 6 M20 nuts, 3 stop plugs)	7ML1830-1GM
M20 cable gland kit (4 M20 cable glands, 4 M20 nuts, 4 washers)	7ML1930-1FV
Spare parts	
Card, mother main, AC, comm ready	C) 7ML1830-1ML
Card, daughter, comm ready	C) 7ML1830-1LY
Card, display	7ML1830-1LQ
See SmartLinx product page 5/310 for more information.	
C) Subject to export regulations AL: N, ECCN: EAR99	
[®] Modbus is a registered trademark of Schneider Electric.	
[®] Allen-Bradley is a registered trademark of Rockwell Automation.	
[™] DeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA).	

Level Measurement

Continuous level measurement - Ultrasonic controllers

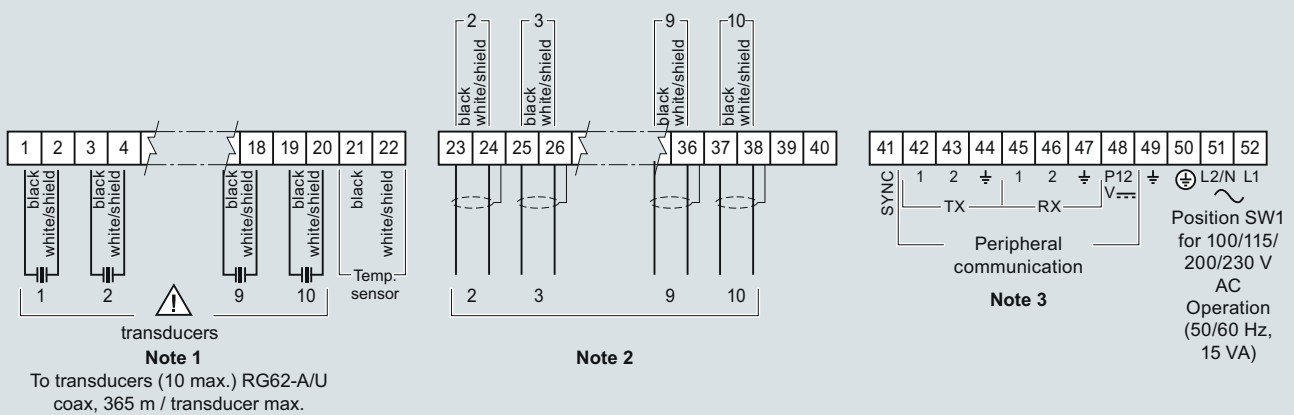
SITRANS LU10

Dimensional drawings



SITRANS LU10, dimensions in mm (inch)

Schematics



Notes:

1. Transducer cables must be run in a grounded metal conduit separate from other wiring (except TS-3 temperature sensor wiring, if applicable).
2. Optional TIB-9 card for multiple temperature sensors. Do not jump the terminals if TS-3s are not used.
3. The SITRANS LU10 is compatible with the following Siemens Milltronics peripherals:
 - SITRANS LU SAM - relay satellite alarm module
 - SITRANS LU AO - analog output module

SITRANS LU10 connections

Level Measurement

Continuous level measurement - Ultrasonic controllers

SITRANS LU SAM

Overview



SITRANS LU SAM Satellite Alarm Module provides up to 20 relay outputs for the measurement points of the SITRANS LU10 level monitor.

Benefits

- The SITRANS LU SAM can be located up to 1500 m (5000 ft) from the SITRANS LU10
- Relay outputs can be assigned to any point on the SITRANS LU10

Application

The operation of the SITRANS LU SAM is programmed via the SITRANS LU10. The only on-board settings are for bank selection and output testing.

Using a SITRANS LU SAM, you can have two relay outputs for all ten measurement points, all 20 for a single measurement point or any combination between the two.

All relays are Form C to allow NO or NC wiring.

Technical specifications

Mode of operation	Satellite alarm module
Input	
Communications	Data from SITRANS LU10
• Transmission rate	4800 bits/s
• Voltage	± 20 mA bipolar current loop
Output	
Relays	20 multi-purpose relays, programmable from SITRANS LU10 SPDT Form C relays, rated 5 A at 250 V AC, resistive load
± 20 mA bipolar current loop	Input and transmission
• Max. load	1 receiving unit
Rated operation conditions	
Ambient conditions	
• Ambient temperature	-20 ... +50 °C (-5 ... +122 °F)
• Location	Indoor/outdoor
• Installation category	II
• Pollution degree	4
Design	
Weight	3 kg (6.6 lbs)
Material (enclosure)	Polycarbonate
Degree of protection	Type 4X/NEMA 4X/IP65
Cable connection	2 copper conductors, twisted, with foil shield/drain wire, 300 V 0.5 ... 0.75 mm ² (22 ... 18 AWG)
Electrical connection and relay connection	Copper conductor according to local requirements, rated 250 V 5 A
Power supply	100/115/200/230 V AC ± 15 %, 50/60 Hz, 20 VA
Displays and controls	1 LED for display of voltage/communications state, 20 LEDs for display of relay states
Certificates and approvals	CE, FM, CSA _{US/C} , C-TICK

Selection and Ordering data	Order No.
SITRANS LU SAM	C) 7ML5811-1A
Satellite alarm module provides up to 20 relay outputs for the measurement points of the SITRANS LU10 level monitor.	
Approvals: CSA _{US/C} , FM, CE, C-TICK	
Operating Instructions	
English	C) 7ML1998-5CF02
German	C) 7ML1998-5CF32
Note: Instruction manuals should be ordered as a separate line item on the order.	
This device is shipped with the Siemens Milltronics manual CD containing the complete Quick Start and instruction manual library.	

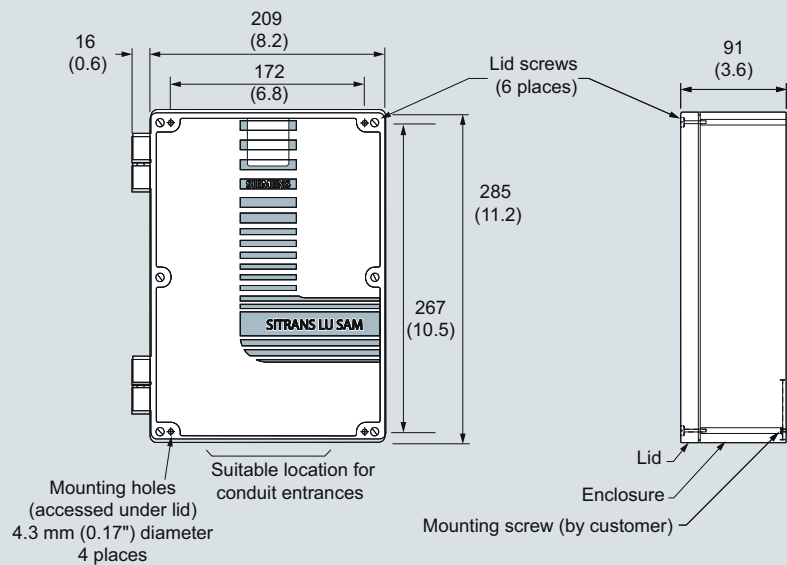
C) Subject to export regulations AL: N, ECCN: EAR99

Level Measurement

Continuous level measurement - Ultrasonic controllers

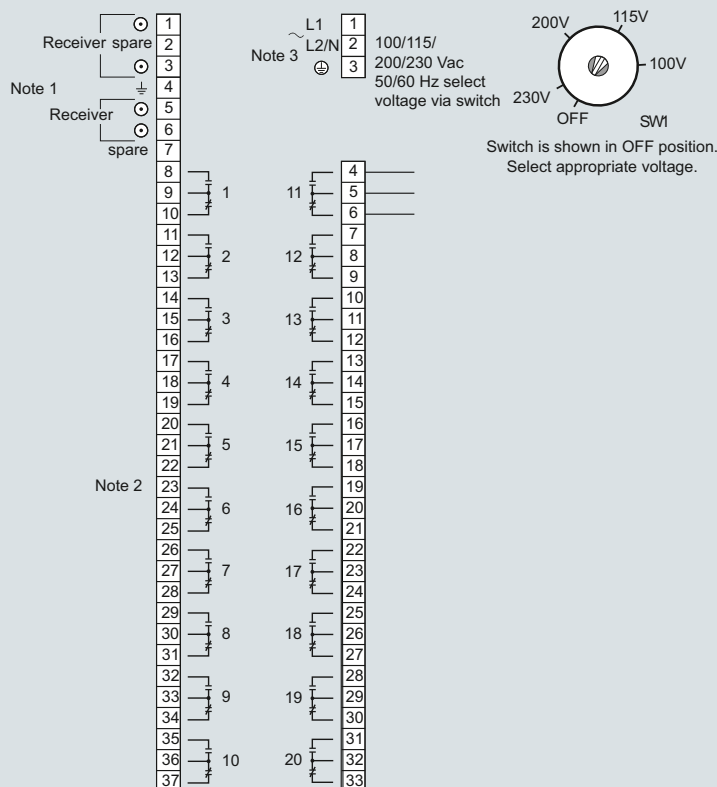
SITRANS LU SAM

Dimensional drawings



SITRANS LU SAM, dimensions

Schematics



- Note:
1. SITRANS LU SAM receiver is polarized.
 2. Refer to associated application device instruction manual for wiring detail. Check that the communication parameter P740 (SITRANS LU10) is 'ON'.
 3. If SITRANS LU SAM is unpowered, transmitter ceases communication to all downstream peripherals.
 4. Relay contact Form 'C' SPDT, 5A at 250 V AC non-inductive (typical of up to 20 per SITRANS LU SAM).

SITRANS LU SAM connections

Level Measurement

Continuous level measurement - Ultrasonic controllers

SITRANS LU AO

Overview



The SITRANS LU AO Analog Output Module provides remote analog output for the measurement points of the SITRANS LU10 level monitor.

Benefits

- Analog outputs can be up to 1500 m (5000 ft) from the SITRANS LU10
- Analog outputs can be per transducer and/or average of 2 or more

Application

The operation of the SITRANS LU AO is programmed via the SITRANS LU10. The only on-board settings are for bank selection and output testing.

The SITRANS LU AO can provide up to 10 analog outputs (each sharing a common negative bus which is electrically isolated from ground).

Technical specifications

Mode of operation	Output module
Input Communications <ul style="list-style-type: none"> • Transmission rate • Voltage • Polarization • Max. load 	Data from SITRANS LU10 4800 bits/s ± 20 mA bipolar current loop Non-polarized 1 receiving unit
Output Analog outputs <ul style="list-style-type: none"> • Max. load • Resolution 	10 analog outputs, programmable from SITRANS LU10 0 or 4 ... 20 mA, isolated Input and transmission 750 Ω 0.1 %
Rated operating conditions Ambient conditions <ul style="list-style-type: none"> • Ambient temperature for enclosure • Location • Installation category • Pollution degree 	-20 ... +50 °C (-5 ... +122 °F) Indoor/outdoor II 4
Design Weight Material (enclosure) Degree of protection • Cable connection • Electrical connection and relay connection	2 kg (4.4 lbs) Polycarbonate Type 4X/NEMA 4X/IP65 2 copper conductors, twisted, with foil shield/drain wire, 300 V 0.5 ... 0.75 mm² (22 ... 18 AWG) Copper conductor according to local requirements, rated 250 V 5 A
Power supply	100/115/200/230 V AC ± 15 %, 50/60 Hz, 15 VA
Displays and controls	1 LED for display of voltage/communications state
Certificates and approvals	CE, FM, CSA _{US/C} , C-TICK

Selection and Ordering data

Order No.

SITRANS LU AO

Provides remote analog output for the measurement points of the SITRANS LU10 level monitor.
 Approvals: CSA_{US/C}, FM, CE, C-TICK

C) **7ML5810-1A**

Operating Instructions

English

C) **7ML1998-5CE01**

German

C) **7ML1998-5CE31**

Note: Instruction manuals should be ordered as a separate line item on the order.

This device is shipped with the Siemens Milltronics manual CD containing the complete Quick Start and instruction manual library.

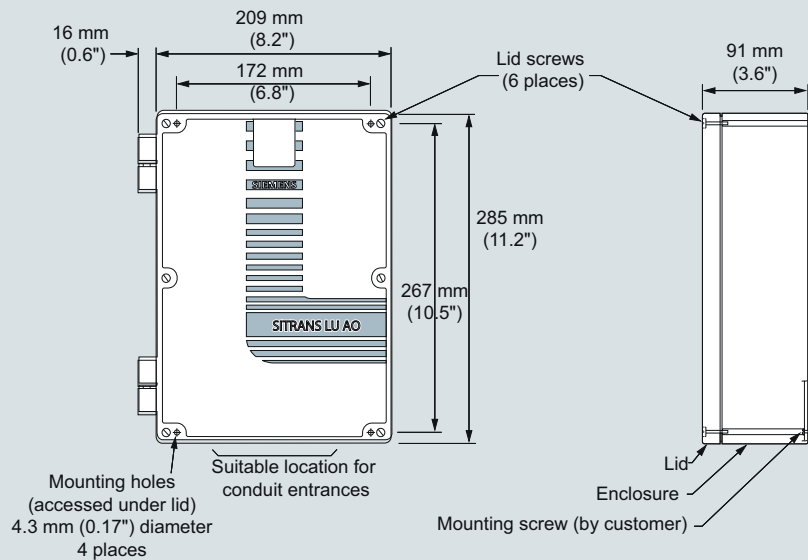
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Level Measurement

Continuous level measurement - Ultrasonic controllers

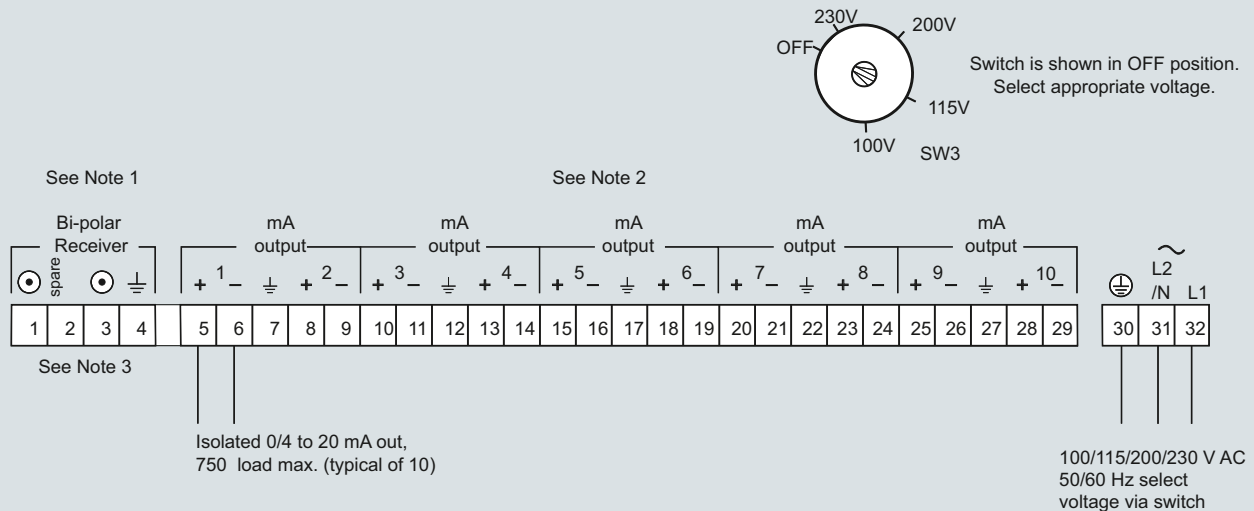
SITRANS LU AO

Dimensional drawings



SITRANS LU AO, dimensions in mm (inch)

Schematics



Note:

1. SITRANS LU AO receiver input is non-polarized.
2. Refer to associated application device instruction manual for wiring detail. Check that the communication parameter P740 (SITRANS LU10) is ON.
3. SITRANS LU AO interconnecting cable shield should be grounded at SITRANS LU10 only. Insulate shields at junctions to prevent inadvertent grounding. Maximum individual loop length is 3000 m (10,000 ft).

SITRANS LU AO connections